

Serial No. 09/817,521

TRW Docket No. 15-0228

**REMARKS**

Claims 1, 2, 6-13, 16-23, 25, 26, 28, 29, 31-33, 35-37 and 40 remain pending in this application, claims 3-5, 14, 15, 24, 27, 30, 34, 38 and 39 having been cancelled by the above amendment. Of these claims, claims 1-3, 7, 11, 16-23, 26, 28, 29 and 35-37 stand rejected under 35 USC §102(b) as being anticipated by Hassett. Claims 4, 14, 15, 27, 33, 34 and 38-40 stand rejected under 35 USC §103(a) as being unpatentable over Hassett in view of Smith et al. Claims 5, 6, 12, 13, 24, 25 and 30-32 stand rejected under 35 USC §103(a) as being unpatentable over Hassett in view of Robinson et al.

In view of the preceding amendments and the following remarks, these rejections are traversed, and reconsideration of this application is respectfully requested.

Applicant's invention is a hazardous materials information management system that monitors and controls the shipment of hazardous materials throughout a network of roads or otherwise. The system assesses environmental conditions and the like to provide route information for the hazardous materials, and responds to emergency situations in the event of an accident or the like. If a vehicle transporting hazardous materials has an accident, where chemicals are released from the vehicle as a plume of noxious gases, the system takes appropriate action to determine the position of the plume, based on weather and other factors, and the degree of danger to people at that location.

Independent claims 1, 10, 23 and 29 have been amended above to specifically state that Applicant's invention is a system that monitors the shipment of hazardous goods by at least providing route information for the goods. The route information can be based on a risk analysis of the optional shipment route, an emergency condition

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determination, an emergency response, and, as applicable, a projected plume dispersion. The system calculates the plume dispersion based on shipment data, geographic position data and near real-time weather data. Applicant respectfully submits that the prior art of record does not teach a hazardous management system of this type, as now more particularly claimed by Applicant.

U.S. Patent No. 5,347,274 issued to Hassett teaches a hazardous waste shipment system 10 that includes a microprocessor controlled transponder 6 positioned on a vehicle, local modules 4 periodically dispersed through the travel area of the vehicle, a central networking system 2, and sensors 8 that monitor the pressure, temperature, etc. of the shipment being transported. The network 2 is in two-way communication with the modules 4 and the modules 4 are in two-way communication with the transponders 6 on the vehicles. Column 5, lines 32-46, provides a summation of an emergency response by the network 2.

Applicant respectfully submits, and it appears to be recognized by the Examiner, that Hassett does not teach or suggest a hazardous waste shipment system that provides information related to plume dispersion of the material in the event of an accident, as now more particularly claimed in Applicant's independent claims.

It is believed that the Examiner is relying on U.S. Patent No. 5,724,255 issued to Smith et al. to teach a plume dispersion calculation system. Smith et al. teaches a system for calculating a protective action zone, including a safety zone for evacuation purposes, based on the dispersion of a plume of noxious gases as a result of an accident or the like. The Smith et al. system apparently employs post-processed modeled data and selected multi-variable equations combined with qualitative and

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quantitative inputs. The system may be provided on a palm top computer to be used in the field.

Applicant respectfully submits that Smith et al. only teaches a technique for monitoring a noxious plume to determine the areas that are going to be effected by the plume based on wind direction, wind speed, temperature, etc. What Smith et al. fails to teach is that the plume monitoring system is or can be part of a hazardous material management system as particularly claimed by Applicant. Nowhere in Smith et al. does it appear to teach or suggest that the plume dispersion system can be part of an overall hazardous materials information management system, where the hazardous management system provides many other features relating to the transportation of hazardous materials, including optimal route determination, regardless of whether the shipment is involved in an accident or a plume is dispersed.

Applicant's claimed invention describes such a hazardous material shipment system that stores information relating to specifics of the shipment, and includes an analysis module, or other device, for monitoring the shipment, including optimal routes. Applicant respectfully submits that nowhere in Hassett does it teach or suggest that the hazardous waste shipment system disclosed therein can include plume dispersion analysis, and nowhere in Smith et al. does it teach or suggest that the plume dispersion analysis technique disclosed therein can be used in combination with a hazardous materials information management system. Applicant respectfully submits that the Examiner has not made a prima facie case of obviousness for the combining the teachings of Smith et al. and Hassett to render Applicant's claimed invention obvious.

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U.S. Patent No. 6,381,538 issued to Robinson et al. teaches a system for determining an optimal route for a vehicle, such as an airplane, watercraft, vehicle, etc. based on environmental conditions. The environmental conditions may include weather conditions, wind speed, wind direction, accumulated precipitation information, road conditions, grade of terrain transversed, or the like. However, the system disclosed by Robinson et al. is not used in combination with a hazardous materials information management system that monitors the environmental conditions associated with hazardous material transportation. Robinson et al. appears to determine the easiest route for the particular vehicle, and is not particularly sensitive to those conditions that would affect the shipment of hazardous material. Applicant respectfully submits that nowhere in Hassett et al. does it teach or suggest that the hazardous waste shipment system disclosed therein includes determining an optimal route for the shipment based on the various factors claimed by Applicant, and nowhere in Robinson et al. does it teach or suggest that the optimal route calculation system disclosed therein can be employed in combination with a hazardous materials information management system as claimed by Applicant.

Moreover, Robinson et al. does not teach or suggest the combination of a hazardous waste management system that provides an optimal route for a shipment of hazardous materials, and includes a technique for determining plume dispersion. Therefore, Robinson et al. cannot provide the teaching missing from Hassett and Smith et al. to make Applicant's claimed invention obvious.

In view of the preceding amendments and remarks, it is respectfully requested that the §102(b) and §103(a) rejections be withdrawn.

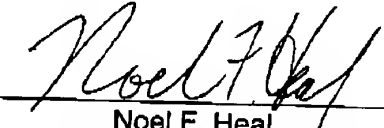
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It is now believed that this application is in condition for allowance. If the Examiner believes that personal contact with Applicant's representative would expedite prosecution of this application, he is invited to call the undersigned at his convenience.

Respectfully submitted,

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**ATTACHMENT FOR CLAIM AMENDMENTS  
VERSION WITH MARKINGS TO SHOW CHANGES MADE  
U.S. Serial No. 09/817,521; Filed: March 26, 2001**

1. (Amended) A system for managing the shipment of hazardous material goods, comprising:

a storage device for storing data related to the shipment;

a processor for retrieving in near real-time and updating at least one data set in the storage module; and

an analysis module for analyzing the data and providing the results of the analysis to a user, said analysis module identifying a proposed route calculated based on risk analysis including data selected from the group consisting of an optimal shipment route, an emergency condition determination, an emergency response, and as applicable, a projected plume dispersion, said projected plume dispersion being related to the emergency condition determination, wherein the plume dispersion is calculated based on shipment data, geographic positioning data, and near real-time weather data specific to the emergency condition and physical location of the goods.

6. (Amended) The system of Claim [5] 1 wherein data on the route and along all possible alternative routes includes population density and distribution, political boundaries, environmental boundaries, surface inclination and topology, road surface type, road dimensions, road height and weight limitations, road authorizations for cargo types, and road segment distances.

10. (Amended) A method for managing a shipment of hazardous material goods, comprising:

obtaining shipment data containing information about the goods;

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determining optimal and alternate routes for transport of the goods;

obtaining geographic positioning data about the location of the goods as they travel from a starting location to a distribution location;

using the geographic positioning data to select weather data related to the location of the goods;

monitoring the shipment with regard to transport progress and to detect an emergency condition, wherein monitoring the shipment includes providing projected plume dispersion, if applicable, in response to the emergency condition, wherein the plume dispersion is calculated based on shipment data, geographic positioning data, and near real-time weather data specific to the emergency condition and physical location of the goods;

calculating a recommended response to a detected emergency condition; and  
automatically notifying database-defined emergency response authorities.

23. (Amended) A method for management of shipment of hazardous materials, said method comprising:

obtaining weather data, shipment data, and geographic positioning data related to the shipment;

determining optimal and alternate routes, and determining a proposed route calculated based on a risk analysis that consists of an impedance type module which summarizes resistance of a route and which selects the lowest resistance route;

sensing an emergency condition for the hazardous materials during the shipment;

calculating an emergency hazardous condition and extent based on the weather

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data, shipment data and geographic positioning data, wherein calculating an emergency hazardous condition includes providing projected plume dispersion, if applicable, in response to the emergency condition, wherein the plume dispersion is calculated based on shipment data, geographic positioning data, and near real-time weather data specific to the emergency condition and physical location of the goods; and

wherein the emergency hazardous condition and extent is determined remotely based on the geographical position of the shipment.

25. (Amended) The method of Claim [24] 23 wherein data on a route and along all possible alternative routes includes population density and distribution, political boundaries, environmental boundaries, surface inclination and topology, road surface type, road dimensions, road height and weight limitations, road authorizations for cargo types, and road segment distances.

29. (Amended) A management system for shipment of goods, the system comprising:

a network for retrieving shipment data, geographical positioning data and near real-time weather data; [and]

an optimal route module for determining a best route based on relevant static and dynamic considerations; and

an emergency assessment module for projecting emergency conditions likely to be created in the event of an emergency condition of the goods as a function of retrieved data and recommended alterations to the route based on these conditions, wh rein the emergency assessment module calculates an anticipated plume dispersion, if applicable, of the goods related to the emergency condition, the dispersion being



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calculated based on shipment data, geographic positioning, geospatial data and weather data.

31. (Amended) The system of claim [30] 29 wherein the route module identifies a proposed route calculated based on risk analysis that consists of an impedance type model which summarizes "resistance" of a route and which selects the lowest "resistance" path.

32. (Amended) The system of claim [31] 29 wherein data on the route and along all possible alternative routes includes population density and distribution, political boundaries, environmental boundaries, surface inclination and topology, road surface type, road dimensions, road height and weight limitations, road authorizations for cargo types, and road segment distances.

36. (Amended) The system of claim 29 further comprising a sensor for monitoring the shipment, said sensor detecting the emergency condition.

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